# CALIFORNIA STATE BOARD OF HEALTH.

## MONTHLY BULLETIN.

*Entered as second-class matter August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894.*

Vol. 3. SACRAMENTO, SEPTEMBER, 1907. No. 4




## PUBLIC HEALTH ASSOCIATION MEETINGS.

The following program has been issued by the California Public Health Association for the meeting at Woodland on October 25th:

11:00 A. M. Address by President,
Dr. A. E. OSBORNE, Santa Clara, Cal.

11:30 A. M. Experiences of a Health Officer,
Dr. J. B. WRIGHT, San José, Cal.

2:00 P. M. Pure Food.....Prof. M. E. JAFFA, Berkeley, Cal.
(Director Pure Food Laboratory.)

3:00 P. M. Observations of Sanitary Work in Eastern Cities,
Dr. W. F. SNOW, Stanford University.

4:00 P. M. Business Meeting.

7:45 P. M. Tuberculosis. Illustrated lecture,
Dr. C. C. BROWNING, Monrovia, Cal.

All health officers and members of boards of health wishing to attend should send their names and official position to the Secretary, Dr N. K. Foster, at Sacramento, who will forward them to Dr. F. K. Ainsworth, Chief Surgeon of the Southern Pacific Railroad, who will furnish half-fare rates, good for five days before and five days after the meeting. With an excellent program and cheap rates this should be the fullest meeting we have ever had.

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The Health Officers of Southern California held a meeting and banquet at the Alexandria Hotel, Los Angeles, September 28th, and organized with the following officers: Dr. C. C. Valle, of San Diego, President; Dr. Stanley P. Black, of Pasadena, Vice-President; Dr. W. W. Roblee, of Riverside, Secretary and Treasurer.

Every one interested in public health matters is admitted to membership.

During the session, which began at 10 o'clock, papers relating to milk were read by Dr. A. E. Rishel, chief inspector of the Bureau

of Animal Industry; George W. Hood, milk inspector; E. H. Miller, city chemist of Los Angeles; Dr. L. M. Powers, health officer of Los Angeles; Dr. George H. Kress, of the California State Medical Society; and Dr. Stanley P. Black, of Pasadena.

As the health officers of the south are in no way behind in the usual energy shown in that part of the State, this association will be a power for good. They will work now with organization instead of as individuals, laws will be drawn that are uniform, and mutual assistance rendered in the enforcement. The semi-annual meetings will be a means of bringing the health officers into closer relations with each other, and with better acquaintance and the discussions of topics of interest to all, each one will be stronger and better equipped for his work.

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The third semi-annual session of the Central California Health Officers' Association met in the rooms of the Board of Health in Fresno, October 8th. The program was short, but more than made up in quality if it lacked anything in quantity.

The first paper was on Vaccination, by Dr. S. W. R. Langdon, Health Officer of Stockton. He traced the terrible path of smallpox from the earliest historical times, and told of the millions who died yearly. This was contrasted with the time succeeding the introduction of vaccination, when, in well-vaccinated countries, smallpox almost entirely disappeared.

Dr. T. M. Hayden, Health Officer of Fresno, presented a paper on Milk. The doctor contends, and rightly, that the human mother should furnish a proper supply of milk for her own young, but as she does not, it is no less than criminal to furnish the child a supply full of filth from the stable. He outlined rules that would give better results and lessen the morbidity and mortality of the State.

The discussion of the papers was interesting and showed the deep interest taken in the questions by the health officers.

The San Joaquin Valley Medical Association voted to make the Central California Health Officers' Association an auxiliary of its society and devote a part of each meeting to hearing its papers. This will broaden its influence and be the means of closer union of health officers and physicians.

## ANTI-PLAGUE OPERATIONS IN SAN FRANCISCO.

Herewith are presented extracts from recent reports of the anti-plague operations in San Francisco, showing the work done in districts for the weeks specified:

### WORK DONE IN DISTRICTS.

*Week ended October 5, 1907—*

Number of sick inspected, 48; plague, 0; suspicious, 18; negative, 30.
Number of dead inspected, 95; plague, 0; suspicious, 5; negative, 90.
Number of premises inspected, 4256.
Number of houses disinfected, 371.
Number of houses destroyed, 261.
Number of nuisances abated, 458.
Number of rats found dead, 630.
Number of rats trapped, 318.
Number of blocks covered with Danysz' virus, 0.
Number of poisons placed, 6535.
Number of inspections of contacts, 59.

*Week ended October 12, 1907—*
Number of sick inspected, 50; plague, 3; suspicious, 11; negative, 36.
Number of dead inspected, 49; plague, 8; suspicious, 3; negative, 38.
Number of premises inspected, 4773.
Number of houses disinfected, 98.
Number of houses destroyed, 80.
Number of nuisances abated, 340.
Number of rats found dead, 628.
Number of rats trapped, 862.
Number of blocks covered with Danysz' virus, 0.
Number of poisons placed, 14,367.
Number of inspections of contacts, 47.

Respectfully,
RUPERT BLUE,
P. A. Surgeon, Commanding.

## THE PLAGUE.

The plague situation in California has not materially changed since the last issue of the Bulletin. Cases have appeared with considerable regularity, so that to date (October 15th) there are 73 verified cases and 44 deaths. As the disease is disseminated by rats and mice, no great diminution of cases could be expected until these vermin are greatly diminished. This is being done as rapidly as possible, and, considering all the difficulties to be overcome, remarkable progress has been made. In San Francisco, where the refugee camps and numberless small shacks that sprang up after the fire gave the rats an ideal place to live near the human inhabitant, it is really a wonder that more cases have not occurred.

Outside of San Francisco cases have been found—1 in Point Richmond and 3 in Oakland. The infection in these cases may have been local, or from outside, but the same work is being done as if it were known to be local. Oakland is doing strenuous work in cleaning up and killing rats, which work, besides lessening the danger of plague, will lessen the danger from other diseases. The other cities are also awakening to the necessity of cleaning up, and are active in that direction.

In order to prevent the spread of plague, all vessels of whatever nature in San Francisco Bay and its tributaries are being fumigated with sulphur to kill vermin. This is repeated every fourteen days, and there is but little probability of rats being carried away by boats, but the possibility must be recognized, and every town should take steps to clean up and kill off the rats. The individual householder should see that his place is clean and that no rats are allowed to live with him.

## ABSTRACT OF REPORT ON PLAGUE INVESTIGATIONS IN INDIA.

Issued by the Advisory Committee appointed by the Secretary of State for India. The Royal Society and the Lister Institute, The Journal of Hygiene, Vol. 6, No. 4. Sept. 1906. American Agents: G. P. Putnam's Sons.

The introductory chapter records the conclusions of a number of investigations on the subject of rats and rat fleas, in their relation to the dissemination of plague. Practically unanimously, the students of the epidemiology of plague regard the existence of plague among rats as of significance in connection with the spread of plague in man. The human outbreak is always preceded by an epizootic of plague in rats. The manner by which the transmission from rat to man is brought about is an important problem to be elucidated. The literature

of plague contains frequent references, indicating that the writer had in mind the possibility that suctorial insects spread the infection. Various workers have reported experiments in which plague was transmitted under conditions indicating that fleas were the agent of transmission.

The common flea of rats of India and Australia is *Pulex cheopis*. It has been shown that this species will, upon the death of a rat, desert it for an unusual host, such as guinea-pigs, or even man. Plague bacilli have been found in the stomach of individuals of this species. The habit of depositing intestinal contents upon the skin, exhibited by the flea when sucking blood, adds to the danger of the flea as a factor in the spread of plague.

The committee transmitted the plague from rat to rat under conditions that excluded all agencies for transmission except fleas, and air. It was attempted to repeat the experiments with rats free from fleas, but it was impossible to free rats from fleas. This deficiency in the evidence was supplied by experiments in which healthy rats were killed by exposure to rat fleas from plague-stricken rats.

A very extended series of experimental epidemics among guinea-pigs showed that close contact of plague-infected animals, with healthy animals—fleas excluded—does not give rise to an epizootic among those exposed. The conditions were such as to lead to the conclusion that the excreta of infected animals are unimportant factors in spreading infection. The rate of progress of an epizootic is in direct proportion to the number of fleas present. An epizootic may start without direct contact of healthy and infected animals. Infection can occur without contact with contaminated soil.

Guinea-pigs allowed liberty in plague-infected houses became infected with a large number of rat fleas, and 29 per cent died of plague. Fleas from plague-stricken rats in infected houses were used to infect healthy animals, as also were fleas collected from infected houses by means of guinea-pigs. Animals in plague-infected houses, but protected from fleas by flea-proof screens, or by "tanglefoot," remained healthy.

Studies of the physiology of blood-sucking of the rat flea showed that it is accompanied by the injection of saliva into the wound.

Experiments showed that the virus of plague may be transmitted from rat to rat without evidence of alteration of the virulence. Inoculation upon the scarified skin was more difficult to accomplish, but passage from rat to rat by this method did not alter the virulence.

It is quite impossible to condense the results of the voluminous work of the Plague Committee into a brief abstract, without doing injustice. A bare recital of conclusions, disconnected from a description of the carefully planned experiments, gives no idea of the thorough manner with which the problem has been attacked. A perusal of the report gives a most convincing impression of the importance of rats and fleas in the dissemination of the plague.

A. R. WARD.

## EMBALMING FLUID.

The State law contemplates that the State Board of Health shall approve methods of embalming and an embalming fluid. We have been backward in doing this, waiting for the National Funeral Directors' Association to solve the question of a satisfactory fluid. This they

have done, and in response to numerous questions of what is a satisfactory fluid, we publish the following extract from their proceedings:

Formula of embalming fluid as submitted by the fluid committee and accepted by the National Funeral Directors' Association:

| | | |
|---|---|---|
| Formaldehyde | 11 | lbs. |
| Glycerin | 4 | lbs. |
| Borax | 2½ | lbs. |
| Boracic Acid | 1 | lb. |
| Saltpetre | 2½ | lbs. |
| Eosin (1 % solution) | 1 | oz. |
| Water to make | 10 | gals. |

The simplest way to compound this fluid will be:

First—To dissolve the powdered borax and boracic acid in about five gallons of water; stirring, or warming and stirring together, will hasten the solution.

Second—Add the powdered saltpetre. When completely dissolved, add the glycerin and formaldehyde and make up to 10 gallons with water.

Lastly, add the eosin or color solution. Distilled water gives the best results, although soft or rain water may be used.

That this is an ideal fluid we do not claim, but we believe we have proven beyond a doubt that it is better than the usual fluid on the market now. The day of the fluid which contains mineral poisons has passed. Because we felt that this was coming, we avoided all mineral poisons.

The formula we give below is for a fluid which, if used on a basis of four quarts for a 150-pound subject, will answer the demand for an approved *disinfectant* until a better one is found:

| | |
|---|---|
| Formaldehyde (40%) | 14% |
| Borax | 3 |
| Boracic Acid | 1 |
| Glycerin | 5 |
| Saltpetre | 3 |
| Solution of Eosin (1%) | 5 cc. |
| Water, q. s. | |

## VITAL STATISTICS FOR SEPTEMBER.

*Summary.*—For September there were reported 2,043 living births; 2,292 deaths, exclusive of stillbirths; and 1,967 marriages. For an estimated State population of 2,001,193 these figures give the following annual rates: Births, 12.4; deaths, 13.9; and marriages, 12.0. The corresponding rates for August were: 12.8, 14.7, and 10.4.

Marriages were reported for the principal counties as follows: Los Angeles, 432; San Francisco, 355; Alameda, 239; Sacramento, 95; Marin, 77; Santa Clara, 76; and San Diego, 59.

Births were registered in freeholders' charter cities as follows: San Francisco, 400; Los Angeles, 356; Oakland, 127; Berkeley, 41; San Diego, 35; Pasadena, 31; Alameda, 29; Sacramento, 28; Fresno, 27; and San José, 25.

Deaths occurred as follows in the leading cities: San Francisco, 500; Los Angeles, 299; Oakland, 144; Sacramento, 57; San Diego, 43; Berkeley, 38; Alameda, San José, and Stockton, each 31; Fresno, 30; and San Bernardino, 26.

*Causes of Death.*—The principal causes of death in September were the same as in preceding months. Tuberculosis was the leading cause of death, with diseases of the circulatory system (heart disease, etc.) next in order. There were also considerable numbers of deaths from diseases of the digestive system, of the nervous system, and of the respiratory system, ranking in the order mentioned, as well as from various forms of violence—suicide, accidental injuries, etc.

Typhoid fever, as usual, was the most fatal epidemic disease in the month, with diphtheria and croup next in order.

## STATISTICS OF MARRIAGES: 1906.

Reports to the State Bureau of Vital Statistics show that there were 21,317 marriages in California in 1906, the first calendar year covered by the present registration law, against an incomplete total of only 8,338 for the last half of 1905, when the law was being put into operation. The numbers were highest in 1906 for Los Angeles, San Francisco, and Alameda counties, being respectively 4,506, 3,539, and 3,019. Next in order were: Santa Clara, 956; Sacramento, 834; Marin, 750; San Diego, 581; Fresno, 549; Orange, 524; San Joaquin, 520; San Bernardino, 404; Sonoma, 380; Riverside, 287; Santa Cruz, 269; Humboldt, 266; and San Mateo, 252. There were also 100 or more marriages in the year in the following counties, arranged in descending order: Santa Barbara, Tulare, Contra Costa, Solano, San Luis Obispo, Mendocino, Monterey, Butte, Napa, Shasta, Kern, Ventura, Siskiyou, Kings, Yolo, Nevada, and Stanislaus. Among the remaining twenty-four counties the totals range from 89 for Tehama and 88 for Placer to 4 for Mono and 1 for Alpine.

For a State population of 1,882,846 in 1906, estimated conservatively by the Census Bureau method with slight modifications, the 21,317 marriages give an annual rate of 11.3 per 1,000 population. Of the individual counties, Marin, adjoining San Francisco, shows the highest rate, 43.4, and Orange, adjoining Los Angeles, has the next, 22.4. The marriage rates are next highest for the following counties: San Mateo, 19.0; Sacramento, 16.9; Los Angeles, 16.0; San Diego, 14.4; Santa Clara, 14.2; Riverside, 13.9; Alameda and San Joaquin, each 13.2; San Bernardino, 12.6; Fresno, 12.4; Tulare, 12.1; Santa Cruz, 11.8; Santa Barbara, 11.3; San Luis Obispo, 10.9; and Stanislaus, 10.5. In all except the last two the rates exceed or equal the State average. The marriage rates are also notably high for other counties, as follows: Butte, 9.9; Napa, 9.8; Kings, 9.6; Yuba, 9.5; Contra Costa, 9.4; Humboldt and Sonoma, each 9.1; Monterey, 8.8; San Benito, 8.6; Merced, 8.1; Mendocino, San Francisco, and Shasta, each 7.9; and Tehama and Ventura, each 7.6. On the other hand, the rate is only 2.0 for Alpine and 1.8 for Mono.

The marriage rate per 1,000 population is 7.6 for Northern California and 10.7 for Central California, or 10.1 for the fifty counties north of Tehachapi, against 15.3 for the seven counties in Southern California. In Northern as well as Central California the rate is higher for the counties on the coast than for those in the interior. The marriage rate is also higher in urban than in rural districts. Thus, the rate is 10.6 for the metropolitan area, comprising San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo), against 9.6

for the rural counties north of Tehachapi. Similarly, the marriage rate is 16.0 for Los Angeles, as compared with 14.0 for the other six counties of Southern California. The ratio of marriages to population is not only greatest in the two main urban centers of the State, but away from them is also greatest in those counties which contain important cities, such as Sacramento, San Diego, San José, Riverside, Stockton, San Bernardino, Fresno, Visalia, Santa Cruz, Santa Barbara, San Luis Obispo, and Modesto. The high marriage rates for the metropolitan centers and for counties with large cities indicate that there is a strong tendency for marriageable persons living in the country to go to the largest city accessible for the purpose of being married, even leaving the home county for one with a city in which to satisfactorily celebrate the event.

On the other hand, there is a counter movement impelling residents of a metropolitan center like San Francisco or Los Angeles to select for their place of marriage not the metropolis proper, but instead a suburban city or town. This is shown by the very great proportion of marriages to resident inhabitants for Marin and San Mateo counties in the suburbs of San Francisco and for Orange County adjoining Los Angeles. In short, country swains like to celebrate marriage in large cities, while couples belonging to a metropolis are apt to prefer the suburbs.

Of the 21,317 marriages in California in 1906, 15,790 or 74.1 per cent were first marriages for both parties, neither groom nor bride having been married before. In all of the few marriages in Alpine and Mariposa counties both parties were single. Outside these the per cent of first marriages ranges from 95.2 for Plumas, 92.3 for Inyo, and 91.7 for El Dorado to 66.3 for San Mateo, 65.3 for Orange, and 61.3 for Marin.

In 2,238 cases the marriage was the first of the groom only, and in 1,674 it was the first of the bride only. That is, there were 568 more instances where widows fascinated bachelors than where widowers won spinsters. In fact, it is a general rule that there are more marriages between single men and widowed or divorced women than between single women and widowed or divorced men. There are exceptions to the rule, and only slight exceptions at that, for only seven counties—Kings, Lake, Lassen, San Benito, Siskiyou, Sutter, and Tuolumne.

In only 1,615 instances, or 7.6 per cent of all, was the marriage the second or over of both groom and bride, each party having been married before. The per cent of marriages where both parties had prior experience is 8.8 for Southern California, 7.1 for Central California, and 6.9 for Northern California. It is 8.4 for Los Angeles and 9.6 for the other counties south of Tehachapi. The per cent is only 5.3 for San Francisco, against 8.1 for the other bay counties.

Altogether 18,028 or 84.6 per cent of the grooms were single, 1,988 or 9.3 per cent widowed, and 1,301 or 6.1 per cent divorced. Among the brides the single numbered 17,464 or 81.9 per cent, the widowed 2,174 or 10.2 per cent, and the divorced 1,679 or 7.9 per cent. The widows outnumber the widowers by 186 or 9.4 per cent, and the divorced women outnumber the divorced men by 378 or 29.1 per cent.

The per cent single, among grooms as well as brides, is considerably higher for San Francisco than for any other geographic division, though not as high as for various small counties.

The per cent widowed is much higher for both grooms and brides in Southern California than in either Northern or Central California, and is especially high for the counties south of Tehachapi other than Los Angeles. The per cents are also much higher for the bay counties adjoining San Francisco than for the metropolis itself.

Generally speaking, the per cent divorced is highest, both among grooms and brides, for the bay counties adjoining San Francisco and for the counties of Southern California other than Los Angeles. The per cent divorced among grooms is 10.3 for Marin, 9.1 for San Mateo, and 6.5 for Alameda County against only 5.2 for San Francisco. Similarly, it is 10.2 for Santa Barbara and 8.8 for Orange County, but only 6.4 for Los Angeles. Among brides, the per cent divorced is no less than 14.5 for Marin, 12.3 for San Mateo, and 7.9 for Alameda as compared with only 7.0 for San Francisco. Likewise the per cent is as great as 12.6 for Orange against 7.0 for Los Angeles County.

There is a tendency for city couples to go to the suburbs to be married, and this movement is particularly strong on the part of widowed and divorced persons, especially the latter. The shy divorcee even more than the coy maiden likes to be wed in a quiet Gretna Green.